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1 (indicating), just shallow. It wasn't as deep of
2 a breath.

3 MR. O'NEAL: The witness was
4 demonstrating a difference in breathing. I don't
5 think the record can show that.

6 BY MS. ROSELLE:

7 Q Okay. Did you say anything to Fred when he got
8 there?

9 A No, I did not. As soon as Fred walked in the
10 door, he said, "He's hyperventilating."

11 Q And what did Fred do?

12 A At that point, he called D.J.--D.J. was with
13 him--to go grab a bag. And then at that point, I
14 left the trailer and he told me to go call Dr.
15 Knowles to notify him of the situation.

16 Q Why did you leave the trailer?

17 A Fred told me to go outside. He didn't want me
18 talking in the trailer.

19 Q Why?

20 MR. O'NEAL: Objection. Lack of
21 foundation.

22 BY MS. ROSELLE:

23 Q Do you know why Fred asked you to leave the
24 trailer?

25 A I'm not exactly sure, no.

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- 1 Q But you left the trailer with Fred and D.J.
2 inside?
3 A Correct.
4 Q Okay. And you were instructed by Fred to call --
5 A Dr. Knowles.
6 Q Did you reach Dr. Knowles?
7 A No, I didn't. If you read my statement, I tried
8 calling but all I -- we have a direct line on
9 there and he was not there, so the next number we
10 call is the nurse's station so then I got ahold of
11 the nurse, told her the situation, and then she
12 was going to page Dr. Knowles. And I believe I
13 gave her the cell phone number.
14 Q Did you hear back from Dr. Knowles?
15 A Eventually, yes.
16 Q How long was it between the time you called Dr.
17 Knowles and he called you back?
18 A I don't remember. I had made another call in
19 there to Gold Cross.
20 Q How many times did you call Dr. Knowles?
21 A Just the one time. I called him directly and then
22 I called his nurse's station, so if you want to
23 say two, for him directly and then once for his
24 nurse.
25 Q Okay. When you called him directly, you got no

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- 1 answer at all?
- 2 A Correct.
- 3 Q And then you immediately called the second number
4 for the nursing station?
- 5 A The nurse's station.
- 6 Q And she didn't have him but she said she'd page
7 him and have him call you back?
- 8 A Correct.
- 9 Q And you don't know how long that was between the
10 time you first called him and the time he called
11 you back?
- 12 A No, I don't.
- 13 Q Why did you call Gold Cross Ambulance in-between?
- 14 A During the time I was outside, I just got off with
15 the nurse and I was pretty concerned that, you
16 know, I think we need to get him to the hospital.
17 At that point, Fred opened up the trailer door
18 and -- I don't remember the exact discussion, but
19 something about, "I think we need to get him to
20 the hospital." Then he said something about
21 calling a van. I said, "I'll call an ambulance."
22 He said, "Okay," and then he went back inside.
- 23 Q Were you present when Fred put a bag over Korey
24 Stringer's mouth?
- 25 A I kind of remember looking in there but I don't

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1 A I don't remember. I don't think so.

2 Q Do you recall if he had towels on?

3 A I don't recall.

4 Q Do you recall if he was still dressed?

5 A I believe he was in the clothes that he was in
6 before.

7 Q Okay. Was D.J. still in the trailer?

8 A Yes, he was.

9 Q Had he stayed in the trailer the entire time, if
10 you know, from the time you went out to call Dr.
11 Knowles to the time you came back with the
12 ambulance?

13 A As far as I know, yes.

14 Q And was Fred Zamberletti in the trailer the whole
15 time, between the time you went to call Dr.
16 Knowles and the time you came back with the
17 ambulance?

18 A Yes.

19 Q Okay. When you looked at Korey Stringer, when the
20 paramedics got there, what, if anything, did you
21 observe?

22 A That's when I -- he kind of had kind of a glazed
23 stare in his eye.

24 Q Anything else you observed?

25 A Not that I can recall.

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1 Q Did you hear him talk at all during the entire
2 time that you were with him on July 31st, 2001,
3 beyond what you've described?

4 A Not beyond what I've described, no.

5 Q So from the time after -- after he said thank you
6 to you for taking off his shoes and socks and the
7 tape, you don't recall his ever speaking again?

8 A Not that I can recall, no.

9 Q Okay. Now, it says you assisted placing Korey on
10 a backboard?

11 A Yes. The problem was there were steps leading
12 into this trailer and the difficulty would have
13 been trying to bring the stretcher from the
14 ambulance inside so then we decided -- we had this
15 backboard in the trailer so we rolled him onto the
16 backboard and then carried him out.

17 Q How many of you did it take to carry him?

18 A Pretty much all of us.

19 Q So that was Fred, D.J., you --

20 A And the two paramedics.

21 Q And then you put him in the ambulance?

22 A Yes.

23 Q Now, when you were carrying him out on the
24 backboard, was he still sweating?

25 A I'm not sure.

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1 Q And then Fred got in the ambulance at the advice
2 of the paramedic?

3 A Yes, that's what I recall.

4 Q Did you overhear that conversation?

5 A I'm not sure who asked, but one of the paramedics
6 said, "We'd like someone with some medical
7 experience to ride in the ambulance," and Fred's
8 like, "Okay. I'll do it."

9 Q Okay. How was his breathing as you loaded him on
10 to the backboard?

11 A As much as I can recall, it was pretty rapid.

12 Q Was it as rapid as it had been when you -- when
13 Fred and D.J. arrived?

14 A It was about the same.

15 Q Did you ever take his pulse other than the one
16 time that you've described?

17 A I believe while D.J. was gone getting Fred, I just
18 kind of monitored it to make sure it didn't speed
19 up.

20 Q You monitored it by keeping your fingers on his
21 wrist?

22 A Yes.

23 Q But you weren't timing it or anything like that?

24 A No.

25 Q Can you estimate for me the total time that you

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1 were with Korey from the time you first came over
2 when he was on his knee on the field to the time
3 the paramedics took him away?

4 A Other than kind of the brief, you know,
5 explanations or amounts of time, not really.

6 | Q Were you wearing a watch that day at all?

7 A Yes, I was.

8 Q Do you recall looking at your watch at all that
9 day?

10 A Not really. We're usually busy enough that
11 we're -- I don't really look at the watch.

12 Q The practice ended -- well, the practice ended, I
13 think you said, about 11:10?

14 A Around then. I'm not exactly sure when.

15 Q And you think you were called over five to ten
16 minutes after that?

17 A Probably closer to ten.

18 Q So it was about 11:20?

19 MR. O'NEAL: Object to the estimates as
20 being lacking in foundation, given the witness's
21 testimony. Go ahead.

22 A Approximately.

23 Q Do you recall anyone else who saw Korey Stringer
24 from the time you went in the trailer with him
25 till the time the ambulance took him away?

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- 1 A There might have been a player. I believe there
2 was a player, when the paramedics came, who peaked
3 his head in.
- 4 Q Do you know the player's name?
- 5 A I think it was Bennitte Waddell, but it was just a
6 brief -- poked his head in and Fred said, "We've
7 got this handled," and he left.
- 8 Q When you called the athletic training room to send
9 someone out with a cart, do you recall who you
10 talked to?
- 11 A I don't remember.
- 12 Q Do you recall what you told them?
- 13 A Just to send the cart out. "We're going to bring
14 Korey in."
- 15 Q Okay. Other than the person you talked to to send
16 the cart out and Fred and D.J. and Dr. Knowles and
17 Dr. Knowles' nurse and the ambulance company, did
18 you talk to anyone that you recall between the
19 time you first saw Korey down on his knee on the
20 field and the time the ambulance took him away?
- 21 A I think there was a short phone call in there,
22 someone calling for Chuck. It was one of, I
23 think, our summer interns trying to find something
24 up at Winter Park.
- 25 Q Who called who?

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1 A It was someone calling the cell phone.

2 Q Okay. Because you had Chuck's --

3 A I had Chuck's cell phone.

4 Q Okay. So you answered the phone and somebody was

5 looking for something that was in Winter Park?

6 A Correct.

7 Q And you just said what?

8 A I was explaining to him where this was located,

9 the -- because we send some of our interns up to

10 Winter Park to grab supplies for us and he had a

11 little map and I was trying to explain to him

12 where it was.

13 Q Do you remember his name?

14 A I can picture his face but I can't recall his name

15 right now.

16 Q At any time, did you use the cell phone or any

17 other phone to call Chuck Barta?

18 A No, I did not.

19 Q Why not?

20 A He was -- he said he was going to be gone. I

21 don't remember if he told me the reason right then

22 why he was going to be gone, but he's like, "Call

23 Fred if anything comes up."

24 Q How long before you went over to see Korey on the

25 field was it that Chuck Barta had given you his

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1 cell phone?

2 A I'm not sure. Usually, what happens after
3 practice is we kind of come together in the
4 middle. The team has like a little break or
5 whatever and then Chuck goes and listens to what
6 Coach Green has to say. It would have been a
7 little bit after that. So probably less than five
8 minutes, I would estimate.

9 Q And he just came -- Chuck came over to you or you
10 were standing next to him? How did you get the
11 cell phone?

12 A I don't remember if I walked over to him or if he
13 came to me.

14 Q Okay. And he gave you his cell phone and there
15 was a list of numbers or was it programmed into
16 the cell phone?

17 A No. It was a list of numbers.

18 Q A separate card or something?

19 A It was a laminated paper.

20 Q Was the paper attached to the cell phone?

21 A No. It was by itself. I folded that up and put
22 it in my pocket.

23 Q So you had the piece of paper and the cell phone.
24 And what specifically do you recall Chuck saying,
25 if anything?

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1 A Just what I've told you before: That he was going
2 to be gone so if anything came up, to give Fred a
3 call.

4 Q Now, after the ambulance left, what did you do?

5 A Actually -- go back. I just remembered I called
6 over to Gage Hall to get a van, which I think is
7 in my --

8 Q When was that?

9 A That was right after I called the ambulance, I
10 would have called, because Fred was talking about
11 getting a van over there.

12 Q Okay. So that was after you called the ambulance
13 but before Dr. Knowles called back?

14 A I believe so, yes.

15 Q Okay. Did the van arrive?

16 A It arrived a little bit after the ambulance.

17 Q Do you recall who you talked to at Gage Hall?

18 A No, I don't.

19 Q Do you recall what you told them?

20 A Just that we needed to have a van brought over,
21 but I don't remember what I exactly said.

22 Q Can you remember anything about the time period
23 from the time you first went to see Korey on the
24 sideline to the time that ambulance left that you
25 have not told me?

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1 you instruct him not to answer if the question
2 were whether or not Fred Robbins' pallor on July
3 30th looked like Korey Stringer's pallor in
4 Exhibit 4-K? Would you instruct him not to
5 answer?

6 MR. O'NEAL: Yes, I would instruct him
7 not to answer that.

8 MR. DeMARCO: Okay. Thanks.

9 BY MS. ROSELLE:

10 Q Now, when you got to Fred Robbins when he was
11 laying on the ground, how did you get him to the
12 trailer?

13 MR. O'NEAL: Objection. I'm going to
14 instruct you not to answer. Pursuing this with
15 respect to Fred Robbins and trying to force
16 detailed determinations of what invades the
17 medical privilege and what does not jeopardizes
18 the medical privilege and I have an obligation to
19 my client -- or to Mr. Osterman to protect him
20 from breaching the medical privilege with respect
21 to other players so I'm instructing him not to
22 answer that question.

23 BY MS. ROSELLE:

24 Q When he got to the trailer, you went in the
25 trailer with him, correct?

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- 1 A Correct.
- 2 Q How long were you in the trailer with him before
- 3 Dr. Knowles showed up?
- 4 A I really don't know how much time.
- 5 Q And at some point, Korey Stringer came in the
- 6 trailer?
- 7 A Yes, after Fred and myself and Fred Zamberletti
- 8 were in there.
- 9 Q So during the time that you are in the trailer
- 10 with Fred Robbins, it was Fred Zamberletti, Korey
- 11 Stringer for part of the time. Was there anyone
- 12 else? And Fred Robbins.
- 13 A And Fred Robbins.
- 14 Q And anyone else?
- 15 A Later, Chuck is the one who walked Korey Stringer
- 16 into the trailer.
- 17 Q Did Chuck stay?
- 18 A No. He came in for a little bit and went back out
- 19 to cover practice.
- 20 Q And you were still in the trailer when Dr. Knowles
- 21 then comes?
- 22 A Correct.
- 23 Q Do you recall what time Dr. Knowles showed up?
- 24 A No, I don't.
- 25 Q Did you talk to Dr. Knowles?

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1 A Only before he left. Korey was asking if he could
2 leave. So then I asked Dr. Knowles, I believe, if
3 I could take these guys in, and he said yes.

4 Q How long was Dr. Knowles in the trailer with Fred
5 Robbins, Korey Stringer and, you, on Monday, July
6 30th, 2001?

7 A I'm not sure.

8 Q Was it longer than five minutes?

9 A I would say longer than five minutes, yes.

10 Q Was it longer than ten minutes?

11 A I'm not sure.

12 Q Were you there the entire time Dr. Knowles was
13 there?

14 A Yes.

15 Q Where was Korey Stringer sitting when Dr. Knowles
16 came in?

17 A He was sitting -- there's two treatment tables and
18 he was sitting on the far treatment table.

19 Q Is that farther away from the door?

20 A A little bit.

21 Q And where was Fred Robbins sitting?

22 A He was on the first treatment table.

23 Q When Dr. Knowles came in, what was the first thing
24 he did?

25 MR. O'NEAL: I'll instruct you not to

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1 answer if it relates to a medical treatment of
2 Fred Robbins.
3 A I can't answer.
4 Q When Korey Stringer came in, what did you do for
5 him?
6 A I believe -- I don't remember offhand. I think
7 Chuck just wanted him to get out of the heat and I
8 believe I gave him some water.
9 Q Did Chuck Barta tell you anything about Korey
10 Stringer when he came in the trailer with him on
11 July 30th?
12 A I don't remember.
13 Q And Korey walked in?
14 A Yes.
15 Q Did he seem angry when he walked in?
16 A He was frustrated, as much as I could tell.
17 Q Was he sweaty?
18 A Yes.
19 Q Was there sweat dripping off his body?
20 A I believe so.
21 Q Was his helmet off?
22 A I believe so.
23 Q Was his hair wet?
24 A I'm not sure.
25 Q Did you feel his skin?

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1 A I don't remember.

2 Q Did you do any tests on him, such as blood
3 pressure, pulse, temperature?

4 A No.

5 Q Did you tell him to get on the table or did he
6 just get on the table himself?

7 A I think when Chuck let him in, he went right up to
8 the table.

9 Q And then you think you got him some water or
10 something?

11 A I think I gave him some water.

12 Q Did you have to go outside the trailer to get the
13 water?

14 A I don't remember.

15 Q Did you give him any Gatorade or anything?

16 A I don't remember.

17 Q Did you give him a towel?

18 A I'm not sure.

19 Q Did Chuck Barta tell you that Korey had been
20 throwing up?

21 A No, he did not.

22 Q Did you know that Korey had been throwing up?

23 A No, I did not.

24 Q Did you have any conversations with Korey between
25 the time he came in the trailer and the time Dr.

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1 Knowles showed up?

2 A I think I might have talked to him just briefly,
3 asked him how he was, and then when I gave him
4 some water, but I can't remember exactly what I
5 said.

6 Q Did he answer you?

7 A I remember him being frustrated about not being
8 able to go all the way through practice and having
9 to come in the trailer and then how -- something
10 about every year something like this seems to
11 happen.

12 Q Did you do any assessment of him?

13 A No, I did not.

14 Q Did you make any determination in your own mind if
15 he was suffering from any kind of heat-related
16 illness?

17 A No.

18 Q Now, how long was Korey in the trailer before Dr.
19 Knowles showed up?

20 A I'm not sure.

21 Q When Dr. Knowles comes in, does he go first to
22 Korey or first to Fred or first to you or what
23 does he do?

24 A I believe I remember him going over by Fred, and
25 that's about all I can remember.

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- 1 Q How long did he stay with Fred?
2 A Not very long.
3 Q And then what did he do?
4 A Then, I believe, after he thought everything was
5 fine, that's when I asked -- Korey was asking if
6 he could go. I said, "Dr. Knowles, is it okay if
7 I take these guys in?" I believe he said yes.
8 Q Did he go look at Korey or did he just look at
9 Fred?
10 A I do not remember.
11 Q Do you have any recollection of him looking at
12 Korey at all?
13 A I can't remember.
14 Q So Dr. Knowles came in, he came in the trailer,
15 and he went and looked at Fred. You remember him
16 doing that?
17 A Correct.
18 Q But you have no recollection of him looking at
19 Korey?
20 A I don't remember.
21 MR. DeMARCO: If the question is you
22 have no recollection and the answer is, "I don't
23 remember," is that "I don't remember if I have a
24 recollection" or "I don't have a recollection"?
25 It's a yes or no question.

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1 MR. O'NEAL: Are you asking me? Why
2 don't we let the lawyer taking the deposition take
3 the deposition.

4 MR. DeMARCO: There's a lack of clarity
5 in the record. I want to make sure.

6 MR. O'NEAL: Tell your partner. She
7 can clear it up.

8 MR. DeMARCO: Go ahead. Excuse me.

9 He's just given the same answer twice and I wanted
10 to clear it up. Go ahead.

11 BY MS. ROSELLE:

12 Q Do you remember Dr. Knowles looking at Korey
13 Stringer on Monday, July 30th, 2001, when he was
14 in the trailer looking at Fred Robbins?

15 A I don't remember him looking at Korey.

16 Q Now, when you say you don't remember him looking
17 at Korey, do you have a recollection that he did
18 not look at Korey?

19 A I can't say that he didn't look at him. He might
20 have. I'm not sure.

21 Q You have no recollection one way or another?

22 A No.

23 Q And then you approach Dr. Knowles and ask him if
24 it would be okay for you to take the people back
25 to their dorm?

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1 A Correct. Back to the athletic training room so
2 they could change.

3 Q And he said yes?

4 A Yes.

5 Q Did he tell you any precautions that should be
6 taken with either Fred Robbins or Korey Stringer?

7 A Not that I --

8 MR. O'NEAL: I was going to say: Don't
9 talk about specifics of what he said about Fred
10 Robbins' medical condition. Now answer the
11 question. Excuse me.

12 A No.

13 Q Did Dr. Knowles ask any questions of you about
14 Korey Stringer?

15 A Not that I can recall.

16 Q Do you recall Korey Stringer speaking to Dr.
17 Knowles at all?

18 A Not that I can recall.

19 Q The only thing you recall is if Korey Stringer
20 spoke to you and asked you if he could go back and
21 change clothes?

22 A Correct.

23 Q Did Dr. Knowles tell you anything with regard to
24 Korey Stringer, other than he could go back to the
25 training center and change clothes?

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1 cuff on Monday, July 30th, 2001?

2 A No.

3 Q That was no?

4 A He had one instrument, but I don't believe we had
5 a pressure cuff.

6 Q What was the one instrument he had?

7 A I think a stethoscope.

8 Q Did you observe Dr. Knowles use the stethoscope to
9 listen to Korey Stringer's breathing on Monday,
10 July 30th, 2001?

11 A No, I did not.

12 MR. MORGAN: What was the answer?

13 MS. ROSELLE: "No."

14 BY MS. ROSELLE:

15 Q Did you observe Dr. Knowles do any type of test
16 whatsoever on Korey Stringer on June 30th, 2001?

17 A I don't recall if he did anything on Korey or not.

18 Q Did you use these clinical signs and symptoms of
19 heat stress syndromes or some similar listing of
20 clinical signs and symptoms to evaluate any
21 players on July 30th or 31st, 2001, at the
22 Minnesota Vikings training camp?

23 A Are you talking about Exhibit 24?

24 Q 24, the page marked 3961.

25 MR. O'NEAL: Object for lack of

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1 foundation.

2 A Would you repeat your question?

3 MS. ROSELLE: Would you read it back,

4 Debra?

5 (The last question appearing on
6 page 205, lines 18 through 22, was
7 read.)

8 A Yes.

9 Q And which of these clinical signs and symptoms did
10 you use to evaluate players?

11 A Checking for profuse sweating, cramps, skin being
12 hot or dry, disorientation. Once again, for
13 heatstroke, skin hot and dry, pulse is rapid and
14 full.

15 Q And did you use these signs and symptoms in the
16 manner that you discussed before lunch?

17 MR. O'NEAL: I'll object to that as
18 vague.

19 A I'm not sure what you mean.

20 Q Okay. We'll go through them. The first one you
21 said was profuse sweating, correct?

22 A Correct.

23 Q When you saw a player who was sweating profusely,
24 how did you evaluate whether or not he was having
25 a heat stress syndrome?

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- 1 A The thing I was looking -- make sure they're
2 sweating. The thing I'm looking for is more the
3 stopping of sweating, because that would be a
4 signal that the body is shutting down.
- 5 Q Did you observe any player that you saw stop
6 sweating on July 30th or July 31st?
- 7 A Not during practice, no.
- 8 Q And the second thing you said, the cramps -- and I
9 think you said this morning, usually you'd be
10 called over if a player was having cramps,
11 correct?
- 12 A Usually, correct.
- 13 Q And then you said -- what was the next one you
14 said?
- 15 A Skin hot and dry.
- 16 Q Okay. And how did you evaluate that if you were
17 standing at the sideline, looking at players on
18 the field?
- 19 A That's something you have to do by touching the
20 skin.
- 21 Q Other than Korey Stringer, did you touch other
22 players' skin on July 30th and 31st to see if it
23 was hot or dry?
- 24 A No.
- 25 Q So it's just Korey Stringer?

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1 A Yes.

2 Q What was the next one?

3 A Disorientation.

4 Q And how did you evaluate the players to see if
5 they were disoriented on July 30th and 31st, 2001?

6 A That's more just watching at practice to see if
7 anything looks unusual, any signs that you think.

8 Q Were you able to discern anything on any players
9 on July 30th or 31st that you thought looked
10 unusual?

11 A No.

12 Q Is it your testimony that as long as a player is
13 still sweating, that he can't have heatstroke?

14 MR. O'NEAL: Objection. Lack of
15 foundation. You can answer.

16 A I think there are some cases where you can still
17 be sweating and suffer heatstroke, but I'm not
18 sure.

19 Q And prior to July 31st, 2001, did you think that
20 there were cases where you could be suffering
21 heatstroke and still be sweating?

22 A I'm not sure.

23 Q Now, when you went over to Korey on July 31st,
24 2001, and he was laying on the ground as depicted
25 in photograph 4-K, was he moaning or making any

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1 noise?
2 A Not that I can recall.
3 Q You don't recall him making any noise at all?
4 A Not moaning, no.
5 Q Was he making any noise at all?
6 A Not that I can recall.
7 Q Have you ever had a written contract with the
8 Vikings?
9 A What do you mean by a written contract?
10 Q A piece of paper with writing on it that sets
11 forth anything about your employment with the
12 Vikings.
13 A I don't believe so.
14 Q I think you said this morning, when I asked you
15 your job history, that you were -- you had
16 internship with the Minnesota Vikings and you were
17 referring to the year 2001. Is that correct?
18 A It's a seasonal assistant is the title but it's
19 still kind of called an internship.
20 Q And why is that?
21 A It's just not a permanent position. It's like a
22 one-year internship.
23 Q Well, how is the seasonal assistant position
24 internship different from the internship you had
25 for training camp in 2000 and 1999?

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1 A Summer interns are not certified athletic trainers
2 and, therefore, they have less responsibility.

3 Q Once you got your certification on or about August
4 31st, 2001, did any of your job responsibilities
5 at the Minnesota Vikings change?

6 MR. O'NEAL: Objection to the form of
7 the question. You can answer.

8 A I would say nothing, just because -- well, once
9 you're certified, you can be out by yourself on
10 the field. That would be about the only thing.
11 And each year, as you work with the Vikings, you
12 know more about the operation and you get a little
13 bit more responsibility. But in regards to
14 certification, the only thing that that changes is
15 you can be out on the field by yourself because
16 you are certified.

17 Q And from the beginning of the training camp on
18 July 30th, 2001, were you out on the field by
19 yourself as though you were certified?

20 MR. O'NEAL: Object to the form of the
21 question as argumentative and multiple in form.

22 Go ahead.

23 A I was out on the field by myself on that Tuesday.
24 It kind of rotates between the seasonal
25 assistants. But that was my turn to be out there.

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- 1 Q Where was Jeff Otte on Tuesday?
- 2 A He would have went inside to start the treatments
- 3 already on the players that had finished.
- 4 Q Did the Minnesota Vikings ask you to provide them
- 5 with written documentation of the certification
- 6 from the NATA?
- 7 A I believe Chuck asked me. I'm not sure when, but
- 8 that's when I gave him a copy of what was
- 9 forwarded to you, the test scores.
- 10 Q Did he ask you for that before July 30th, 2001?
- 11 A I talked to him about the test and told him I had
- 12 passed, but I don't believe he asked for a copy of
- 13 that, no.
- 14 Q When were you told that you had passed the test?
- 15 A You know about a week to two weeks after you take
- 16 the test, which I took it near the end of April,
- 17 so sometime in May is when I found out I passed.
- 18 Q During either the training camp in 2000 or the
- 19 training camp in 2001, were you aware of any
- 20 players that were vomiting?
- 21 MR. O'NEAL: Don't specify players.
- 22 You can answer that question.
- 23 A 2000 and 2001? Not specifically that I saw
- 24 vomiting, no.
- 25 Q Okay. When you were at Mankato State University

Paul Osterman, 5/15/2002

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1 as a student, was there an air-conditioned field
2 house there?

3 A I don't know if it was air conditioned. I know
4 the athletic training room was not air
5 conditioned, but I'm not sure.

6 Q Do you know any large facilities at Mankato that
7 have air conditioning, athletic facilities?

8 A Athletic? I'm not sure, no.

9 Q Now, the trailer where you took Korey Stringer on
10 July 31st, were there any fans in the trailer,
11 either like an overhead fan or anything built in?

12 A There were fans on the air conditioners and I
13 believe there were like about three air
14 conditioners.

15 Q Were they like sleeve window air conditioners?

16 A No. They were actually built in the unit; they
17 were not window units.

18 Q When you say there were fans, you mean that there
19 were fans in the units or were there fans that you
20 could see?

21 A They were kind of built into the unit, but you
22 could -- you could change the level from high to
23 medium, to low or whatever and you could feel it.

24 Q You could feel a change?

25 A Yes.

Paul Osterman, 5/15/2002

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1 field setup in the morning so he would turn it on.

2 Q Okay. When you were in the trailer either on July
3 30th or July 31st, 2001, with Korey Stringer, did
4 you do anything to see if the air conditioners
5 were at their maximum?

6 A I don't know about at their maximum. Usually,
7 we'd keep it at a certain temperature, I think,
8 but I never really checked the air conditioners.
9 I just could tell there was a difference between
10 outside and inside.

11 Q Do you know whether on July 30th or July 31st,
12 2001, the air conditioner that you said may have
13 been off was on or off?

14 A I'm not sure. I think it might have been later in
15 the week that we turned it off, trying to conserve
16 some energy off the generator.

17 Q At any time were you asked by Chuck Barta to open
18 the Gatorade machine so that players could access
19 it without paying?

20 A I don't recall. Usually, what we try to do is --
21 I'm not sure if we had this already at training
22 camp or not but we'd usually make it so if you
23 just hit the button, you can get the Gatorade out
24 because there's a Gatorade machine with the
25 bottles over by Gage and then in the Taylor

Fred Robbins Deposition Excerpts

Fredrick Douglas Robbins, II, 6/24/2002

Page: 1

1 STATE OF MINNESOTA DISTRICT COURT
2 COUNTY OF HENNEPIN FOURTH JUDICIAL DISTRICT
3 - - - - -

4 Kelci Stringer, individually, and as
5 Personal Representative of the Estate
of Korey Stringer, and as Trustee for
the Heirs and Next-of-Kin of Korey
Stringer, and Kodie Stringer, a Minor,
6 through his Parent and Natural Guardian,
Kelci Stringer, and Cathy Reed-Stringer
7 and James Stringer,

8 Plaintiffs,

9 v.

10 Minnesota Vikings Football Club, LLC,
11 and Dennis Green and Michael Tice and
Fred Zamberletti and Chuck Barta and W.
12 David Knowles, M.D. and Mankato Clinic,
Ltd. and John Does 1 through 30 Natural
Persons or Entities Whose Names or
13 Identities are Unknown to Plaintiffs,

14 Defendants.
15 - - - - -
16

17 DEPOSITION OF
18 FREDRICK DOUGLAS ROBBINS, II

19 Taken June 24, 2002
20 Commencing at 10:42 a.m.
21
22

23 REPORTED BY DEBRA McCUALEY POLLARD
24 PARADIGM REPORTING & CAPTIONING INC.
1400 RAND TOWER
527 MARQUETTE AVENUE SOUTH
MINNEAPOLIS, MINNESOTA 55402
25 (612) 339-0545

Frederick Douglas Robbins, II, 6/24/2002

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1 remember what his name was, but he was in there,
2 too.

3 Q Was he in there the whole time you were in there,
4 this intern trainer?

5 A I can't remember. I can't remember exactly if he
6 was in there the whole time.

7 Q Was Fred in the trailer the whole time you were in
8 there?

9 A Yes.

10 Q How long would you say you were in the trailer?

11 A I don't know exactly how long I was in there. I
12 don't know exactly how long.

13 Q Did they do anything to cool you off while you
14 were in the trailer?

15 A Obviously, you know, take my pads off, take my
16 helmet off, gave me a drink of water, Gatorade. I
17 had some ice packs. They maybe put an ice pack on
18 me, stuff like that.

19 Q They put ice packs on you?

20 A I believe so.

21 Q Do you know where they put them?

22 A No, I can't remember offhand.

23 Q Do you know where they got them?

24 A They always have ice bags like in the coolers and
25 stuff.

Fredrick Douglas Robbins, II, 6/24/2002

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1 Q Was that Fred who did that or was that the intern
2 trainer?
3 A Intern.
4 Q Can you describe this intern?
5 A No, I can't remember exactly what he looks like.
6 Q Was he white?
7 A Yes.
8 Q And tell me again: How long were you in the
9 trailer, total?
10 A I don't know exactly how long I was in there.
11 Q At some point, Dr. Knowles came into the trailer?
12 A I believe so.
13 Q Did you know him before you saw him in the
14 trailer?
15 A No.
16 Q Did somebody introduce you to him in the trailer?
17 A Oh, yes. I knew -- obviously, I know who he is
18 but I never had any conversation or anything like
19 that with him.
20 Q And when you first started talking to him in the
21 trailer, what did you say to him?
22 A He asked how I was feeling and what I was having
23 problems with. I told him I was having problems
24 with the headaches I was having and stuff like
25 that.

**Lawrence Armstrong
Deposition Exhibit 6,
pp. 2, 3**

MINNESOTA VIKINGS TRAINING CAMP
2001

KOREY STRINGER: 07/30/01

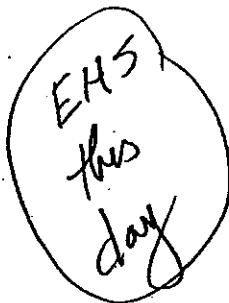
The patient had an episode of heat exhaustion during afternoon training camp. He recovered without incident following rest and hydration.

W. D. KNOWLES, M.D.

WDK:jrg

2001 Minnesota Vikings Training Camp Schedule

Tuesday - 7/31/01



6:30 am	Wake up
6:30	Breakfast
8:45	Practice #3 (pads)
11:10	Practice ends
11:30	Lunch
	Weight Training (assigned times)
3:30	Special Teams Practice #4 (no pads)
4:30	Practice ends
5:00	Team Meeting (Lecture series - Dr. Fran Sepler) Men/Women Issues Your Decision/Your Future
6:00	Dinner
7:00	Special Teams Meeting (40)
7:45	Team Meeting
8:00	Offensive/Defensive Meetings
11:00	In rooms

**Walter Lyons
Expert Report
Deposition Exhibit 2**

DEPOSITION
EXHIBIT

Exhibit 2
slc 7/24/08

Forensic Meteorology Associates, Inc.

46050 Weld County Road 13
Fort Collins, CO 80524
(800) 854-7219 (voice) * (970) 482-8627 (fax)
walyons@frri.com * www.Forensic-Weather.com
Member: National Council of Industrial Meteorologists

31 March 2008

Paul M. DeMarco, Esq.
Waite, Schneider, Bayless & Chesley Co., L.P.A.
1513 Fourth & Vine Tower
One West Fourth Street
Cincinnati, OH 45202

Via email: PaulDeMarco@WSBClaw.com

RE: Stringer
Our File: 08-634

Dear Mr. DeMarco:

As per your request, we have compiled the results of our investigation of the meteorological conditions representative of those occurring on the campus of Minnesota State University, Mankato (the site) on 30 and 31 July 2001 relevant to the collapse at approximately 11:15 AM CDT on 31 July 2001 (the incident) and eventual passing of Minnesota Vikings player Korey Stringer. Special focus was placed on determining parameters relevant to physiological heat stress on humans and placing the weather occurring during this two day period in recent historical context for heat waves in the Mankato, MN region. In addition, we provide a critique of the meteorological aspects of a Minnesota OSHA Industrial Hygiene Field Investigation.

In preparing this report, we have utilized and/or inspected the following meteorological data and information resources in formulating our opinions in the above related matter:

1. Surface weather observations, radar reports, and GOES satellite imagery for the two day study period (available online through the National Center for Atmospheric Research).
2. Surface aviation weather observations obtained by the federally operated Automated Surface Observation System (ASOS) and the Mankato, MN airport (KMKT) (Obtained from the National Oceanographic and Atmospheric Administration/National Climatic Data Center).
3. National Weather Service official public weather forecasts and special public messages and alerts for southern Minnesota, including Blue Earth County and Mankato (source: National Oceanographic and Atmospheric Administration / National Climatic Data Center via Bruce and Frank Watson).

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4. Severe Weather Reports (including excessive heat events) compiled by the National Weather Service for Minnesota, Wisconsin and Iowa (available online from the National Oceanographic and Atmospheric Administration/National Climatic Data Center).
5. Meteorological observations (corrected version) for 30 and 31 July 2001 from the roof of Armstrong Hall, MSU Campus, compiled by the Weather Analysis Laboratory for Teaching Educational Resources (provided by MSU staff).
6. Time lapse sky/cloud video for 30 and 31 July 2001 obtained from camera mounted above Armstrong Hall, MSU campus (VHS tape) (provided by MSU staff).
7. Solar azimuth and elevation tables for Mankato, MN for 30 July 2001, 5 minute intervals (computed online by the Astronomical Applications Department of the U.S. Naval Observatory, Washington, DC).
8. Table for the conversion solar elevation angle to the Globe Temperature (Report on Meteorological Conditions at Mankato in July 31, 2001 Relative to Korey Stringer", provide by Bruce F. Watson, Consulting Meteorologist).
9. Database of dates/hours for which dry bulb temperature was 80°F or higher, and dewpoint temperatures was 74°F or higher, observed at the Mankato, MN between 1990 and 2001 (Source: National Oceanographic and Atmospheric Administration/National Climatic Data Center via Bruce and Frank Watson.)
10. OSHA Technical Manual, Section III: Chapter 4, Heat Stress (available online at www.osha.gov/dts/osta/otm/otm_iii/otm_iii_4.html).
11. Report of an Industrial Hygiene Field Investigation, OSHI 06498, Report #016-01, Minnesota Department of Labor and Industry, 7 pages (provided by Waite, Schneider, Bayless & Chesley Co., L.P.A.)
12. MNOSHA Heat-Stress Guide, Minnesota OSHA, Department of Labor and Industry (available on line at www.doli.state.mn.us/heatstrs.html).
13. Standard meteorological texts and references books (Forensic Meteorology Associates, Inc. library).

SUMMARY OF FINDINGS:

The General Setting:

The Minnesota State University, Mankato (MSU) playing field on which the Vikings practice during training camp and on which Korey Stringer collapsed, is located at an altitude of 1002 feet above sea level, on the plain above the Minnesota River Valley. The ground gives the appearance of being level, but the field and its environs are on ground that slightly slopes away in most directions. There are no higher hills in the vicinity, and there is no ground that is significantly higher in the area. The latitude is 44 degrees 9 minutes north, and the longitude is 93 degrees 59 minutes west.

The closest federal government weather station to the MSU practice field is at Mankato Airport (FAA identifier: KMKT). The Mankato Airport is located on the same flat plain as the MSU campus. KMKT is located 6.5 miles northeast of MSU at an altitude of 1020 feet above mean sea level. The latitude is 44 degrees 13 minutes north,

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and the longitude is 93 degrees 55 minutes west. Because of geographical similarities, the weather reported at the Mankato airport weather station is considered representative of the weather experienced at the MSU practice field for the relevant meteorological variables, given the absence of smaller-scale disturbances such as thunderstorms.

During the two-day period 30-31 July 2001, the Mankato area was engulfed in an unusually strong flow of hot, very moist tropical air. This was the result of a persistent flow of strong southerly winds from the Gulf of Mexico region due to a low pressure system centered over the northern Great Plains. On both days, maximum temperatures reached into the low 90s. Of greater significance is that the dewpoint temperatures both days remained in the middle to upper 70s and even low 80s, which is uncharacteristically high for southern Minnesota.

Weather Conditions on 30 July 2001:

Figure 1 is a combined surface weather chart, satellite image and radar map for the United States at 5:00 PM CDT on 30 July 2007. Much of Minnesota, Iowa, the eastern Dakotas and surrounding areas were experiencing brisk southerly winds transporting one of the most moisture laden air masses in recent record into the region. Temperatures had reached into the low 90s in southern Minnesota, only slightly modulated by thin cirrus clouds that filtered the mid-summer sunlight (Figure 2). A number of regional reporting stations late that afternoon were recording dewpoint temperatures in the low 80s, values rarely experienced in the north central portion of the U.S. Figure 4 details the meteorological record at the KMKT airport sensors (at 15 minute intervals) on this date (with the yellow highlighting indicating approximate times of on-field practice by the Vikings). The dewpoint temperature (a measure of the absolute moisture in the air) was 82°F at 4:45 PM CDT on 30 July 2001, the time when witnesses describe Korey Stringer as first becoming ill on the practice field. That was the highest dewpoint value recorded by the KMKT sensors serving Mankato for any day/hour during the entire historical period examined from 1990 through that date (see below).

Using the KMKT dataset, we additionally calculated the Heat Index (HI) using the formulations developed by the National Weather Service to express the combined effect of temperature and atmospheric moisture on human comfort and safety. Values >105 are considered as signifying the danger category in which sunstroke, heat cramps, or heat exhaustion become possible with prolonged exposure and physical activity. Maximum values based on the KMKT readings reached 111 between 4:35 PM and 4:55 PM CDT on 30 July. It should be noted that the Heat Index presented here does not account for the effect of sunshine, estimated to add as much as 15 units to the computed value.

The industrial hygiene community also makes extensive use of the Wet Bulb Globe Temperature (WBGT) as a metric for determining heat stress on the human body. According to OSHA, the outdoor WBGT during periods of solar load are computed as:

$$\text{WBGT} = 0.7 \times T_{wb} + 0.20 \times GT + 0.10 \times T_{db}$$

where T_{wb} is the wet-bulb temperature, GT is the sun-exposed globe temperature and T_{db} is the standard dry bulb temperature shielded from the sun. The dry bulb temperature is readily available from the KMKT data and the wet-bulb values can be computed using standard equations, while the GT requires additional data not typically measured by standard meteorological stations. Using the results of an experiment conducted by Bruce Watson (Appendix A), the GT can be estimated by using a correction factor (added to the dry bulb temperature) that is a function of the solar elevation angle (Table 1). This Globe Temperature Difference (GTD) is representative of typical summer skies, with some thin cirrus clouds and some lower level cumulus clouds, and is added to the dry bulb temperature ($GT = GTD + T_{db}$).

Figure 4 shows the calculated wet bulb temperature, relative humidity, Heat Index (HI), solar elevation (from the U.S. Naval Observatory), the GTD and the computed WBGT value for persons exposed to the sun. If there were no solar irradiance (indoor practice, for instance), the GTD term would be zero. The indoor value of WBGT is also shown. Given that the sunlight this afternoon was lightly filtered by thin cirrus and some low cumulus clouds, the actual WBGT would be between the full sun and indoor value, but expected to be much closer to the full sun value. It appears that during the late afternoon practice session in which Mr. Stringer was first reported ill, the WBGT reached values of approximately 90°F for the trailing two-hour period.

Winds this day were generally from the southerly quadrant and fairly brisk with sustained speeds in the 10-15 mph range, with gusts occasionally above 20 mph. Since the official KMKT winds are taken at the standard elevation of 33 feet, we employed the logarithmic wind law for a well mixed atmosphere over a grassy field to estimate the winds at "face" level would be reduced by 19%, as shown in Figure 4.

Weather Conditions on 31 July 2001:

The weather conditions on the following day, 31 July 2001, were essentially unchanged. The national weather map (Figure 5) shows a continuation of the pronounced southerly transport of extremely humid Gulf of Mexico air into the Minnesota-Wisconsin-Iowa region. By 11:00 AM CDT, temperatures in southern Minnesota had reached the mid 80s with dewpoint again approaching or surpassing 80°F (Figure 6). The GOES satellite image (Figure 7) shows very thin cirrus level clouds were only slightly filtering the sunlight over southern Minnesota.

Figure 8 details the observed and calculated variables for 31 July, noting the approximate time of the incident (in purple).

We computed the running average HI for the two-hour period before 11:35 AM CDT on 31 July 2001 obtaining a value of 95. The HI had reached a value of 99-100 by 11:35 AM CDT. Again it should be noted that the Heat Index computation includes no

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effects from the sun, which the National Weather Service estimates can add as many as 15 units at mid-summer fair skies at local noon.

By 11:35 AM CDT, the estimated in-sun WBGT had reached 87.0°F, with a trailing two hour value of 86.4°F.

The second consecutive day of high temperatures and extreme humidity resulted in the National Weather Service issuing public alerts as to the developing heat stress hazard. Table 2 displays the National Weather Service (NWS) public forecasts and urgent weather messages issued beginning in the pre-dawn period and continuing into the afternoon. The 4 AM CDT zone forecast including Mankato, MN was calling for:

...TODAY...HOT AND HUMID. HEAT INDEX INCREASING TO 105 TO 110 DEGREES. BECOMING WINDY WITH HIGHS IN THE MIDDLE 90S. SOUTH WIND INCREASING TO 25 TO 30 MPH AND GUSTY.

Beginning with the pre-dawn public forecast, the NWS also included a formal heat advisory as Heat Indices were expected to reach the 105-110 danger level. By 11:00 AM CDT the situation was of sufficient gravity that the National Weather Service issued an urgent public message declaring:

...DANGEROUSLY HOT AND HUMID...EXTREMELY HUMID CONDITIONS WILL TEAM UP WITH HOT WEATHER TO PRODUCE POTENTIALLY LIFE THREATENING CONDITIONS. INTENSE HEAT ACTUALLY PRODUCES MORE FATALITIES NATIONWIDE THAN TORNADOES...BLIZZARDS OR HURRICANES...TAKE IT EASY OUT THERE. SOME FATALITIES OCCUR WHEN PEOPLE DO NOT HAVE AIR CONDITIONING AND DO NOT OPEN THEIR WINDOWS...SO YOU ARE ENCOURAGED TO CHECK ON THOSE WHO MAY NOT BE IN A LOCATION WITH ADEQUATE VENTILATION.

A check of severe and extreme weather reports archived by the National Weather Service reported two deaths from excessive heat in southwestern Wisconsin on 31 July 2001. That area was experiencing essentially the same air mass as Mankato.

Mankato Area Heat Climatology Between 1990 and 31 July 2001

Meteorologists experienced with Minnesota weather recognized the late July 2001 heat wave was an atypical event for their region, primarily due to the very high dewpoint values which are more typically found in the southern and southeastern parts of the nation in late July and early August. In order to place this episode in context, the National Climatic Data Center was requested to provide a database of all dates and hours for which both the dry bulb temperature equaled or exceeded 80°F and the dewpoint temperature also was 74°F or high for the period 1990 through 2001, inclusive, at the KMKT airport sensors. Figures 9 a, b show the compilations made from these data. For each hour, we computed the wet bulb temperature, the relative humidity, the current NWS Heat Index (HI) and the venerable Temperature-Humidity Index (THI). This latter measure of human comfort was widely used into the 1980s. In general, at a THI <70, very few individuals would complain of heat or humidity-induced discomfort. As the THI value approaches 80, virtually all would agree the heat and humidity were becoming

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extremely uncomfortable. THI values in the low to mid 80s are generally perceived as extraordinarily uncomfortable by almost all individuals.

The data were stratified by Heat Index (descending order) and chronologically. The extreme values recorded on 30 and 31 July 2001 are highlighted in yellow. The left side ranks (in decreasing order) the days/hours by HI. The "worst" on the chart was 114.7 at 17:00 PM CDT on 12 July 1995, during the killer Midwest heat wave of that summer, when the Vikings do not appear to have been in training camp. The right side ranks them in descending chronological order. The peak HI was actually slightly higher on 30 July 2001 (111.4) than it was on 31 July 2001 (111.1). (The prior worst HI day on the chart, 29 July 1999 [HI max = 107.6], also appears to have been before the Vikings were in training camp that year.)

Prior to Korey Stringer's death, out of all the days on which the Minnesota Vikings were likely practicing in training camp between 1990 and through 31 July 2001, the combined heat/humidity in Mankato was the highest on 30 and 31 July 2001.

Examination of MSU/Armstrong Hall Data as a Further Cross-Check

While the KMKT data are believed very representative for determining heat and humidity conditions at the site, we note that hourly weather observations are taken by the MSU atmospheric sciences program using instruments located atop Armstrong Hall. These data (labeled KMSU) and values derived therefrom for 30 and 31 July 2001 are presented in Figure 10.

It must be noted the KMSU/Armstrong Hall instruments are mounted on a pole, which extends approximately 20 above the building roof, and is a total of 52 feet above the ground. The raw sensor data are regularly corrected as a result of the routine monthly calibration (these corrected values are given in Figure 10). While a given temperature or humidity sensor may produce an accurate reading, there remains the question as to whether it is representative, in this case, of conditions at 5-6 feet above the adjacent practice field. Standard NWS temperature and humidity measurements are obtained at 5-6 feet above grass, and not 20 feet above the roof of a rather large structure. Such sitings are notorious for producing values which can be influenced by thermal plumes rising off the heated roof surface and, in some cases, by exhaust from HVAC systems.

For completeness sake, we did analyze the KMSU data for comparison with the KMKT dataset. Figure 10 shows the computed relative humidity (RH), the wet bulb temperature (T_{wb}), the dry bulb - wet bulb temperature departure (DEP), and the NWS HI value. In addition, the solar elevation angles (degrees) for this latitude/longitude/date were computed using online algorithms at the U.S. Naval Observatory. From this, we estimated the Globe Temperature Difference (GTD) using Table I. We next estimated the two variants of the Wet Bulb Globe Temperature (WBGT) using the standard OSHA equations. As above, we assume that the T_{wb} approximates the natural wet bulb temperature (and it should almost always be lower, therefore making the calculation conservative). The indoor value assumes no radiant heat source (the sun) (and thus GT =

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T_{ab}). The full sun value assumes all credit for radiant heat source (the sun) using the Watson GTD values (Table 1) for each solar elevation (derived for sky conditions similar to those observed, which included some thin high clouds, some low cumulus and/or haze during a portion of this period.) Also shown are the wind direction (180 degrees is from the south) and the average wind speed and gusts (mph) at the rooftop anemometer. These were not reduced to "face" level as building turbulence effects make the application of the logarithmic wind profile questionable for that purpose.

Figure 11 summarizes the differences between the airport (KMKT) ASOS observations (at 5 minutes before the hour) and those obtained on the hour at KMSU (Armstrong Hall). In comparing the KMKT ASOS and MSU/Armstrong Hall data, we note some differences between the temperatures and dewpoints and thus the HI and the estimated WBGT values. As a rule, the HIs computed from the MSU data were generally higher than from the KMKT airport data during most of the day on 30 July 2001 and during the morning of 31 July 2001. For example, at 11:00 AM CDT on 31 July 2001, the HI at MSU was 4.9 units higher than at the airport. KMSU readings tended to be hotter but drier during the daytime hours, which is consistent with an elevated rooftop exposure. The differences noted do suggest, however, there were no fundamental differences in meteorological conditions between the airport and MSU, with those found being likely the result of the non-representative instrument exposure at Armstrong Hall.

Review of Meteorological Data Contained in the Report of Minnesota OSHA

We also reviewed the report prepared by the Minnesota OSHA on the death of Korey Stringer, with particular attention paid to the purported conditions in Mankato during the relevant time. The document is difficult to evaluate inasmuch as little detail is provided as to methodologies employed and how conclusions were reached. Our analyses focused on Tables 1 through 6 of that report. Numerous apparent inconsistencies and inaccuracies have been found in these tables. Below are summaries of our observations and opinions of the meteorologically relevant issues:

Table 1

- (1) The data used are from 30 July 2001, whereas subsequent Tables 2 - 4 refer to 31 July 2001, the day Mr. Stringer collapsed on the practice field.
- (2) The data purport to be from the MSU measurements atop Armstrong Hall. If so, they appeared to have used the raw, uncalibrated (*i.e.*, inaccurate) data.
- (3) The uncalibrated (*i.e.*, inaccurate) MSU data are used to estimate the "Effective Temperature" (ET) and, from that, "Wet Bulb Globe Temperature" (WBGT). The algorithm used ($WBGT = 1.102 \cdot ET - 9.10$) apparently was obtained from a Minnesota OSHA document, "MNOSHA Heat-Stress Guide," available online (<http://www.doli.state.mn.us/heatsrs.html>). It is clearly stated in the other OSHA document that the nomogram used to estimate ET "can only be used where no significant radiant heat sources are present." Thus, its use to estimate conditions on an unshaded field appears to violate MNOSHA's own guidelines.

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Table 2

(1) The implied conclusions here are flawed inasmuch as the input meteorological data were erroneous and the algorithm applied was invalid (see above).

(2) The 2-hr Time-Weighted Average (TWA) values are substantial underestimates of the likely values.

Table 3

(1) There is an error in converting wind speed to m/sec at 0835AM CDT.

(2) The "Effective Temperature" and "WBGT" are invalid, as they use a methodology only suited for indoor environments without significant radiative effects. The WBGT listed appear implausibly low as a result.

Table 4

(1) The two-hour TWAs are invalid for the reasons stated above.

Table 5

(1) Field measurements in Mankato were reputedly taken on August 8, 2001 using a Questemp 15 Area Heat Stress Monitor. However, it is not clear that the measured conditions are representative of area weather patterns for that day.

(2) We note that while the reported "8 August 2001" was a very warm and humid day according to Table 5, conditions had actually been worse (based upon Mankato Airport ASOS readings) on the preceding four days (4, 5, 6 and 7 August 2001).

(3) The dry and wet bulb readings appear suspect at times. The sharp drop in dry and wet bulb values at 7:03 AM CDT to 7:22 AM CDT are uncharacteristic of post-sunrise conditions.

(4) The measured globe temperatures (GLOBE) must be in error. They are everywhere less than the dry bulb temperature. If properly sited to be illuminated by the sun, this could not be the case during daytime.

(5) The computed WBGT values do not correspond to the algorithm presumably employed (shown on bottom of page).

Table 6

(1) Values cannot be correct for reasons discussed in reference to Table 5.

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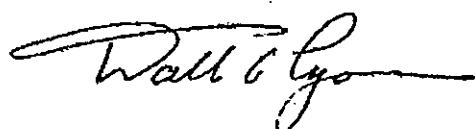
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Conclusions:

The opinions expressed above are concluded to a reasonable degree of scientific certainty, based upon the currently available evidence and our professional meteorological training and experience.

Sincerely,
Forensic Meteorology Associates, Inc.



Walter A. Lyons, Ph.D.
Certified Consulting Meteorologist
President and Senior Scientist